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THE GENUS *HEMIERGIS* (LACERTILIA, SCINCIDAE) IN WESTERN AUSTRALIA

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ABSTRACT

Four taxa are recognized: *H. initialis initialis* (Werner), *H. i. brookeri* nov., *H. peronii quadrilineata* (Duméril & Bibron) and *H. p. peronii* (Fitzinger); the last-named includes the tridactyl population of the extreme south-west corner.

INTRODUCTION

I agree with Copland (1946: 63) that Malcolm Smith (1937: 224) was wrong to merge *Hemiergus* in *Leiopisma*. However, I leave open the question whether *Saiphos* of south-eastern Australia is separable from *Hemiergus*; for the purposes of this paper I assume that it is a good genus.

This revision is based solely on material in the Western Australian Museum.

Genus *Hemiergus*

Hemiergus Wagler, 1830, 'Nat. syst. amphib.', p. 160. Type-species (by monotypy): *H. decresiensis* Wagler [= *H. decresiensis* (Fitzinger)].

Tetradactylus Gray, 1839, Ann. Nat. Hist. 2: 333. Type-species (by monotypy): *T. decresiensis* Gray [= *H. peronii* (Fitzinger)]. Not *Tetradactylus* Merrem, 1820.

Tridactylus Gray, *ibid.* Type-species (by monotypy): *T. decresiensis* Gray [= *H. peronii* (Fitzinger)]. Not *Tridactylus* Latreille, 1802.

Chelomeles Duméril & Bibron, 1839, 'Erpétologie générale' 5: 774. Type-species (by monotypy): *C. quadrilineatus* Duméril & Bibron [= *H. peronii quadrilineata* (Duméril & Bibron)].

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Diagnosis

Very small to moderately small, elongate, short-legged lygosomatine skinks with lower eyelid movable and bearing a transparent disc; digits 5+5, 4+4, 3+3 or 2+2, short, circular in section, with smooth lamellae; tail very fragile. Distinguishable from *Lerista* and *Leiolopisma* by complete series of suboculars, absence of ear aperture and presence (in life) of bright yellow or reddish ventral pigments.

Distribution

Southern Australia from Jurien Bay (W.A.) to the New England Tableland (N.S.W.). Three species, including the extralimital *H. decresiensis*.

Description

Snout-vent length up to 79 mm. Nasals normally separated. Prefrontals usually narrowly separated (absent in *H. initialis brookeri*). Supraoculars 4, 2 in contact with frontal. Supraciliaries 5-7. Loreals 2. Upper labials normally 7. Temporals 3, uppermost larger than two subequal lower temporals. Mid-body scale rows 17-26.

Back golden to dark reddish brown, with or without an olive tinge, with 0-4 rows of dark dots or short dashes, the central ones sometimes coalescing to form a vertebral stripe. Head usually darker than back. Dark dorsolateral stripe often present. Lateral and ventral scales with or without dark spots or margins. Under-tail usually more heavily spotted than ventrals. Bright ventral pigments rapidly disappearing in alcohol.

Relationships

See Greer (1967: 7).

KEY

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|---|-----|-----|-----|-----|-----|-----|---------------------------------|---|
| 1. Fingers and toes 5; venter orange-red | ... | ... | ... | ... | ... | ... | ... | 2 |
| Fingers and toes 2, 3 or 4; venter yellow | ... | ... | ... | ... | ... | ... | ... | 3 |
| 2. Prefrontals present | ... | ... | ... | ... | ... | ... | <i>H. initialis initialis</i> | |
| Prefrontals absent | ... | ... | ... | ... | ... | ... | <i>H. initialis brookeri</i> | |
| 3. Fingers and toes 2 | ... | ... | ... | ... | ... | ... | <i>H. peronii quadrilineata</i> | |
| Fingers and toes 3 or 4 | ... | ... | ... | ... | ... | ... | <i>H. peronii peronii</i> | |

Hemiergis initialis initialis

Lygosoma (Hemiergis) initiale Werner, 1910, 'Fauna Südwest-Australiens' 2: 480. Lion Mill and Jarrahdale, W.A. (Michaelsen & Hartmeyer).

Diagnosis

A small short-tailed *Hemiergis* with 5 fingers, 5 toes, orange-red venter, and prefrontals.

Distribution

South-west of Western Australia: Darling Range, north nearly to the Avon, south nearly to Collie, and east to Boddington; and the south-east of the South-west Division, north to beyond Lake Varley, south nearly to the Gairdner River, west to Toolbrunup (*vide* Hobart Smith, 1939), and east to Ravensthorpe. Extralimital in western South Australia.

Description

Snout-vent length (mm): 20-47 (N 119, mean 37.1). Tail up to 136% of SVL.

Nasals separated. Prefrontals separated (usually narrowly), rarely touching. Suture between frontoparietals varying from absent (14% of specimens) to complete (49%); in most examples of latter, suture curving so that right frontoparietal smaller than left. Supraoculars 4, first 2 in contact with frontal. Supraciliaries 6 (rarely 5). Upper labials 7 (rarely 8). Nuchals mostly 0 or 1 (94% of specimens), occasionally 2, rarely 3 (N 76, mean 0.5). Mid-body scale-rows 20-22 (N 60, mean 20.5). Lamellae under longest toe: 7-10 (N 39, mean 8.2) in Darling Range; 8-11 (N 35, mean 9.6) in south-east of South-west Division.

Head dark grey. Back reddish brown to dark reddish brown with or without an olive tinge, usually with 2 or 4 longitudinal rows of faint to moderately conspicuous dark spots. Dark dorsolateral stripe usually discernible. Lateral scales greyish brown, with or without faint dark spots. Ventrals usually unspotted, occasionally dark-edged.

Geographic variation

Specimens come from three regions: (1) Darling Range, (2) south-east corner of South-west Division, and (3) far west coast of South Australia. The first two populations are separated by a gap of 170 km. They differ mainly in the number of subdigital lamellae.

Within the second population there is some regional variation: in all 22 specimens from between Ravensthorpe and the Gairdner River the suture between the frontoparietals is complete, compared to 7 out of 23 specimens from further north.

The third population is separated from the second by a gap of more than 1000 km, which is partly occupied by *H. initialis brookeri*. This population is represented by only one specimen; it is dorsally pale brown and has 8 lamellae under the longest toe and no nuchals.

Material

South-west Division (W.A.): Stoneville (27889); Mundaring Weir (14871-2, 19828, 24900-1, 26443, 26478, 34345); 10 km E of Kalamunda (22659, 37483); Gooseberry Hill (39068); Kalamunda (21231-4, 22854-5, 41772); Lesmurdie (18159, 18259); Bartons Mill (10274-5); Karragullen (18157-8, 40980); 8 km SE of Karragullen (18161-4); Churchmans Brook (18152); Wungong Brook (24914, 34582-6); 8 km E of Byford (18155-6); Gleneagle (23472-3); Jarrahdale (18154); Banksiadale (34259); Boddington (13633 *a-m*); Dwellingup (39972-3, 39980, 40126-9); Waroona (41243); Harris River, near Collie (46392); Holt Rock (34390); 8 km N of Ravensthorpe (30824-6); 24 km W of Ravensthorpe (44853-4); Lake Magenta Reserve (39895, 39910, 39922-3, 45305, 45311-3, 47336); 29 km E of Pingrup (39822-4); Cairlocup Reserve (41119-22); Chinocup Reserve (41090-8, 41103-4, 43481-2, 43491); 18 km S of Nyabing (29893); Fitzgerald River (36778-81, 36802-4, 36853-4, 36876-7, 36928, 36948, 36959); 25 km N of Bremer Bay (36187).

South Australia: 8 km W of Ceduna (24577).

Hemiergis initialis brookeri subsp. nov.

Holotype

R24677 in Western Australian Museum, collected on 9 October 1964 by G.M. Storr and A.M. Douglas at 40 km WSW of Caiguna, Western Australia, in 32°20'S, 125°00'E.

Diagnosis

Differing from *H. i. initialis* in its lack of prefrontals, more numerous nuchals, and lesser size.

Distribution

Far south-east of Western Australia: vicinity of Great Australian Bight from Mt Ragged east nearly to Eucla.

Description

Snout-vent length (mm): 21-38 (N 12, mean 33.1). Tail up to 119% of SVL.

Nasals separated. Prefrontals fused to frontonasal. Supraciliaries usually 6, 5 in one specimen. Upper labials 7. Suture between frontoparietals absent in 67% of specimens, and partly present in remainder but not extending forward more than one fifth of way to anterior corner of frontoparietal. Nuchals 2 or 3 (N 12, mean 2.5). Midbody scale rows 20-22 (N 11, mean 20.2). Lamellae under longest toe 8-10 (N 11, mean 8.5).

Head dark grey. Back pale to dark reddish brown, occasionally with an olive tinge, usually with two median lines of dark spots. Little or no development of dark dorsolateral stripe. Lateral scales usually without dark spots. Ventrals usually unspotted; anterior scales occasionally dark-edged.

Remarks

This skink is named after Mr Michael G. Brooker of the CSIRO Division of Wildlife Research. He collected some of the paratypes and many other reptiles in the Nullarbor region.

The strange location of *H. i. brookeri* between two segments of *H. i. initialis* implies varying rates of evolution in the four populations of *H. i. initialis*, slow in the three populations of the nominate subspecies and fast in *brookeri*. Perhaps ancestral *brookeri* was reduced to a very small population during some arid period, allowing the rapid acquisition of genetic peculiarities.

Material

Eucla Division (W.A.): Junana Rock, 9 km NW of Mt Ragged (36240); Pine Hill (36223-4); Mullendunya Tank (32°53'S, 124°35'E) (45355-6); Toolinna Rockhole (45349); 40 km WSW of Caiguna (24676); 8 km SE of Cocklebiddy (31887-9); 46 km W of Eucla (33439).

Hemiergis peronii quadrilineata

Chelomeles quadrilineatus Duméril & Bibron, 1839, 'Erpétologie générale' 5: 774. New Holland.

Diagnosis

A large long-tailed *Hemiergis* with yellow venter and two fingers and toes.

Distribution

Lower west coast and coastal plain of Western Australia from Jurien Bay south to Busselton, including Essex Rocks, Cervantes I., Green Islets, Rottne I., Garden I. and Penguin I.

Description

Snout-vent length (mm): 22-75 (N 182, mean 50.6). Tail up to 174% of SVL.

Nasals separated. Prefrontals separated (usually narrowly); rarely in very short contact. Supraoculars usually 4, with first 2 in contact with frontal; first 2 fused together in one specimen; 5 supraoculars in another specimen, with 3 in contact with frontal. Supraciliaries 6 (94% of specimens), 7 (5%) or 5 (1%). Upper labials 7 (very rarely 8). Nuchals mostly 3 or 4 (91% of

specimens), occasionally 2, rarely 0 or 1 (N 93, mean 3.1). Midbody scale rows 17-21, mostly 18 (N 87, mean 18.7). Lamellae under longer toe 6-11 (N 99, mean 9.0).

Back pale to dark reddish brown or golden brown or greyish brown, occasionally tinged with olive; usually with 2 median lines of dark spots that may coalesce to form a vertebral stripe. Dark laterodorsal stripe and lateral spotting variable in development. Venter unspotted.

Material

South-west Division (W.A.): Jurien Bay (37970); Essex Rocks (18122-7, 18130-9); Cervantes Islands (18128-9); Green Islets (18115-8, 19152); Wanneroo (31220, 31553-6, 34070-1); Upper Swan (18083-6); Noble Falls (13697); Guildford (21235-6); Mt Yokine (21274-5); Nollamara (34014); Tuart Hill (48170); Scarborough (48168-9); North Perth (4842); Mt Lawley (810); Perth (414, 428, 675, 1182, 2839, 4386, 4388-9, 7033, 8628); Leederville (947-8); Floreat Park (22853, 24887-8); Kings Park (18070-2); Crawley (18075-6); Nedlands (8317, 18074, 18087, 47786); Dalkeith (18077-80); Claremont (2252, 31468); Swanbourne (12819); Cottesloe (18081-2); Rottnest Island (2012-4, 2354-8, 2858-9, 3257-65, 3721-4, 4330, 11007-8, 12767, 15192-9, 18102-14, 18212, 25215-6); East Fremantle (26850); Willagee (34348); Melville Heights (31981); Applecross (21273, 22283); Mt Pleasant (25073); South Perth (4777); Como (2283-5, 41671); Bentley (40014); Garden Island (13025, 18100-1, 28472, 35042-8); Penguin Island (18088-99); Waikiki (40984); Wagerup (251); Yarloop (18140-2); Bunbury (48404); Busselton (34249, 42594).

Hemiergis peronii peronii

Seps peronii Fitzinger, 1826, 'Neue Classif. Rept.', p. 253. Kangaroo Island, S.A.

Chiamela Duvaucellii Gray, 1839, Ann. Nat. Hist. 2: 333. King George Sound, W.A.

Tetradactylus decresiensis Gray, *ibid.* Kangaroo Island, S.A. Not *Hemiergis decresiensis* (Fitzinger).

Hemiergis woodwardi Lucas & Frost, 1902, Proc. Roy. Soc. Vict. 15: 77. Western Australia.

Lygosoma (Hemiergis) quadridigitatum Werner, 1910, 'Fauna Südwest-Australiens' 2: 480. New name for *Seps peronii* Fitzinger.

Lygosoma peronii var. *tridactylum* Boulenger, 1915, Ann. Mag. Nat. Hist. (8) 16: 65. Yallingup, W.A. (R. Scharff).

Diagnosis

A large long-tailed *Hemiernis* with yellow venter and digits 3+3 or 4+4.

Distribution

Southern Western Australia from the lower west coast east nearly to the Nullarbor Plain and north to Busselton, nearly to Collie, Bridgetown, Rocky Gully, Stirling Range, Lake Grace, Lake Varley and the Fraser Range, including an islet in Hamelin Bay, Eclipse I., Coffin I., Bald I., and the Archipelago of the Recherche (Boxer I. and Termination I.). Extralimital in South Australia (Smyth, 1968).

Description

Snout-vent length (mm): 24-79 (N 448, mean 52.0). Tail up to 188% of SVL.

Nasals separated. Prefrontals separated (usually narrowly); occasionally touching. Supraoculars 4, first two in contact with frontal. Supraciliaries 6 or 7, very rarely 5 (N 225, mean 6.5). Upper labials 7 (very rarely 6 or 8). Nuchals 0-6, mostly 3 (N 267, mean 2.8). Midbody scale rows 18-22 (N 239, mean 19.6). Lamellae under longest toe 10-17 (N 231, mean 13.2).

Back pale to dark reddish brown or golden brown, yellowish brown or greyish brown, with or without an olive tinge; usually with two or more longitudinal rows of dark spots, the median pair sometimes coalescing to form a vertebral stripe. Blackish dorsolateral stripe from lores to tail variably developed. Lateral scales with or without blackish brown flecks. Ventrals with or without dark spots or edges.

Geographic variation

Specimens from the far west (see map) have only three digits; concomitant with this reduction are fewer subdigital lamellae, viz. 10-13 (N 37, mean 11.3), vs 10-17 (N 194, mean 13.5) in the tetradactyl populations. The tridactyl population also differs in having fewer supraciliaries, viz. 5-7 (16% of 38 specimens with 7), vs 6-7 (58% of 187 specimens with 7), and more numerous nuchals (2-6, N 39, mean 3.3; vs 0-5, N 228, mean 2.8). In digital characters and number of supraciliaries the tridactyl population shows some approach towards *H. p. quadrilineata*. However, in coloration, especially the heavily spotted venter, the tridactyl population is virtually identical with the tetradactyl population to its immediate east, i.e. the humid country between Nannup and the Fitzgerald River.

In the drier country to the northeast, i.e. from the Pingrup district to Hopetoun (and strangely also on Bald Island) the mid-dorsal spots may coalesce into a vertebral stripe and the ventral spotting is weaker or absent. Here, and east to the Fraser Range, lamellar counts are at their highest, averaging between 14 and 15, compared to 12-13 in the westernmost tetradactyl populations and 13-14 in South Australia.



Fig. 1. Map of southern Western Australia showing location of specimens of *Hemiergis i. initialis* and *H. i. brookeri*.

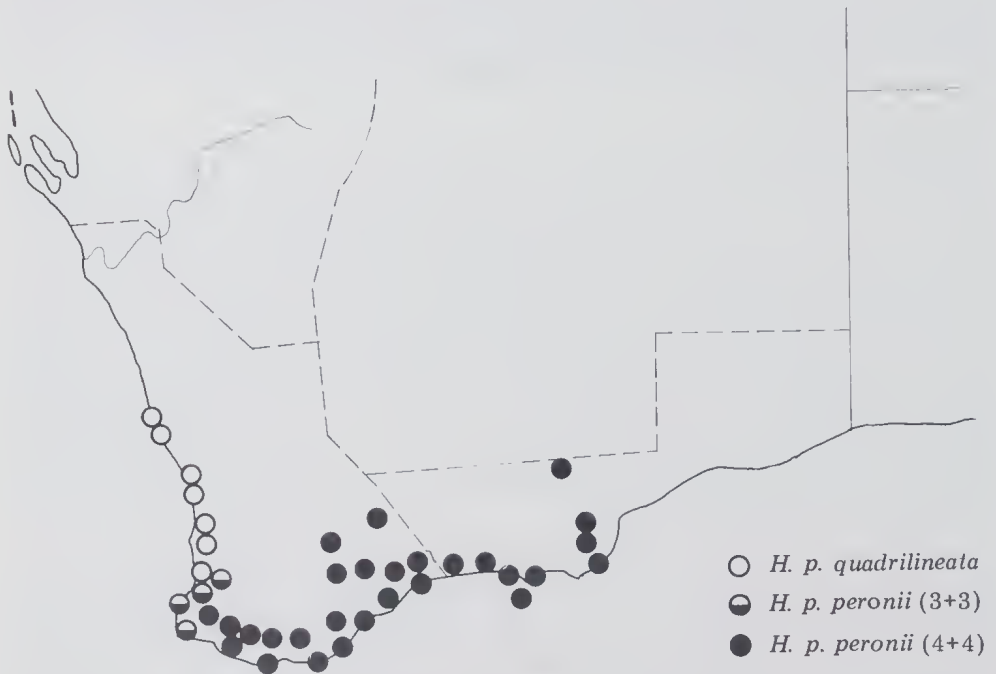


Fig. 2. Map of southern Western Australia showing location of specimens of *Hemiergis p. quadrilineata* and *H. p. peronii*.

At its eastern limit in Western Australia (i.e. east of Fraser Range) and in South Australia the dark dorsolateral stripe is nearly always absent.

The South Australian and Western Australian populations are widely separated (by the Nullarbor Plain). The South Australian specimens are large (SVL 36-79, N 54, mean 56.0; *vs* 25-69, N 311, mean 52.4 in Western Australian tetradactyl specimens, and 24-62, N 83, mean 49.1 in the tridactyl population). In South Australia supraciliary counts of 6 are much more frequent than 7, whereas in Western Australia 7 is more frequent than 6 except in the far west (i.e. in the tridactyl and adjacent tetradactyl populations). The dominant midbody scale count in South Australia is 18, compared to 20 in Western Australian populations except the far eastern. In the last character, as in coloration, the population from east of Fraser Range constitutes a morphological link between eastern and western segments of the subspecies.

Remarks

Though it is the most distinctive population of *H. p. peronii*, I hesitate to treat the tridactyl population as a subspecies. To do so would be tantamount to giving much weight to number of digits and none to coloration, and to implying that tetradactyl specimens from the Nannup district are more closely related to South Australian specimens than to neighbouring tridactyl specimens.

On the other hand I have little hesitation in recognising *H. p. quadrilineata*. At Busselton, where it meets the tridactyl population of *H. p. peronii*, there are marked differences in coloration. Moreover, there is so little evidence of recent gene-flow between them that I do not discount the possibility of *quadrilineata* being a full species.

Material

South-west Division (W.A.): Tridactyl specimens — 8 km SW of Collie (18066-9); Wellington Mill (8349); Donnybrook (18057); Brookhampton (9185); Kirup (18186); Busselton (11019, 47402-3); Dunsborough (12322-3, 18061-5); Yallingup (48298-9); Quindalup (19857); Jarrahwood (39124); Metricup (18060); Margaret River (18056); Calgardup (7726-31, 7953, 7955-9, 7963); Mammoth Cave (67, 12940, 47755-6) and 13 km S (25346); Bride Cave (47759); Devils Lair (39702); Nannup Cave (12425); Arumvale (30236); Alexandra Bridge (18058-9); Karridale (13444, 48405-10); Hamelin Bay (18055); Outer Island, Cosy Corner (21295-6); Kudardup (46246-9); Deepdene (12779); 8 km N of Augusta (37808-11); Carey Brook, Donnelly River (27894-903). Tetradactyl specimens — Nannup (45744-5); Bridgetown, including Carinya (155, 31679); Wilgarup (5595-7); Yanmah (5598, 5600-2); Manjimup, including Dinvale (5583-7, 5589-90, 8181, 8183, 19041-5, 41732-6); 12 km S of Manjimup (18151); Perup (5588); Perup River (18036-7); between upper reaches of Perup and Tone Rivers (42560-8);

Pemberton (5591-2, 5594); Meerup (47884); Yeagerup (47863, 47934-7); Dombakup (18150); Northcliffe (6572-3); Shannon River Dam (19820); Mt Chudalup (18153); East Broke Inlet (47973-8); Nornalup (11041-3); Rocky Gully (48174); Kent River (44669-72); 16 km N of Denmark (43827, 43841-7); Denmark, including Monkey Rock and Rudgyard Beach (297, 19851-2, 22474-81, 24948-51, 24974-9, 31066-7, 37965); Torbay (12820); 10 km W of Mt Barker (18148); Porongorup Range (8735, 21820-1); Chorkerup (4515); Albany (6790, 34263); Eclipse I. (6805, 11277, 45772); lower Kalgan River (18149); Two People Bay (36334, 36358-9, 37836); Coffin Island, Two People Bay (22752); Waychinicup River (29698); Cheyne Beach (18047-54, 18145, 29694-7); Bald Island (18143-4, 19965); Moir Pass (820); Mt Toolbrunup (21822); Bluff Knoll (18043-6); Bremer Bay (33405-7); Boondadup River (37195, 37212-3, 37216); middle and lower reaches of Fitzgerald River, including Twertup Creek (36806, 36812-6, 36831-4, 36874-5, 36926-7, 36984-9, 37721); West Mt Barren (36889); Middle Mt Barren (36904); Lake Grace (30202-4); Cairlocup Reserve (41123-31); 18 km E of Greenshield Soak (39924); 8 km W of Lake Magenta (21738-9); Lake Varley (27260-1); 27 km W of Ravensthorpe (44850-2); 18 km W of Ravensthorpe (18146); Ravensthorpe (4917, 30815); Hopetoun (6424, 11006, 18487) and 16 km E (31118).

Eucla Division (W.A.): Oldfield River (30146); Munglinup River (36234); Dalyup River (18007-35); Boxer Island (10117); Esperance (11370, 11372, 11783-4, 13371 *a-c*, 13677, 13678 *a-c*); Termination Island (10127); Frenchman Peak (41981); west end of Rossiter Bay (46263, 46270-1); Point Malcolm (14467); Israelite Bay (14177, 18040-2); Pine Hill (17599, 36225-6); Junana Rock (36241-4); Juranda Rock (18039); 13 km E of Fraser Range (30717-48); 18 km E of Fraser Range (30264, 30935).

South Australia: Fowlers Bay (24583-5); Ceduna (25554-61); Smoky Bay (24545-55); Port Kenny (27368); Venus Bay (27367); Elliston (27366); 28 km WNW of Port Lincoln (27361-4); Louth Bay (27356-8); Tumby Bay (27343-52); Port Neill (27319-23); Arno Bay (27318); Port Gawler (27284-8).

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